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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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09/158,099 09/22/98 MIWA

K 0163-0707-2X

022850 IM22/0828
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| EXAMINER |
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LIN.K

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| ART UNIT | PAPER NUMBER |
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1722

DATE MAILED:

08/28/01

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/158,099

Applicant(s)
Miwa et al

Examiner
Kuang Y Lin

Art Unit
1722



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Apr 19, 2001
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-18 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

Art Unit: 1722

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of 37 CFR 1.71(a)-(c):

(a) The specification must include a written description of the invention or discovery and of the manner and process of making and using the same, and is required to be in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which the invention or discovery appertains, or with which it is most nearly connected, to make and use the same.

(b) The specification must set forth the precise invention for which a patent is solicited, in such manner as to distinguish it from other inventions and from what is old. It must describe completely a specific embodiment of the process, machine, manufacture, composition of matter or improvement invented, and must explain the mode of operation or principle whenever applicable. The best mode contemplated by the inventor of carrying out his invention must be set forth.

© In the case of an improvement, the specification must particularly point out the part or parts of the process, machine, manufacture, or composition of matter to which the improvement relates, and the description should be confined to the specific improvement and to such parts as necessarily cooperate with it or as may be necessary to a complete understanding or description of it.

The specification is objected to under 37 CFR 1.71 because failing to provide an adequate written description of the invention.

In page 8, third complete paragraph of the specification, it states that the term "molten metal" refers to a metal that is completely liquefied which kept at a temperature above its melting point and the term "solidifying metal" refers to a liquid metal containing solid metal crystals that form at a temperature below the melting point. However, it is a common knowledge that completely liquefied metal must be kept at a temperature above its liquidus temperature and solid crystals in liquid metal is formed between the liquidus temperature and solidus temperature during

Art Unit: 1722

the solidification process, rather than formed at a temperature below the melting point. A metallic material becomes total solid at a temperature below the melting point.

2. Claims 15-18 are rejected under 35 U.S.C. 112, first paragraph, for the same reasons as set forth in the objection to the specification supra.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 15-18 insofar as definite are rejected under 35 U.S.C. 102(b) as being by Radjai et al.

Radjai et al do show to apply a EM vibrating force to an alloy system before and after the start of solidification process. Thus, the claimed invention reads on the prior art reference.

5. Applicant's arguments filed April 19, 2001 have been fully considered but they are not persuasive.

(1) in page 3, 4th paragraph of the remarks, applicants stated that prior art does not show to apply one of an EM vibrating force and an ultrasonic vibrating force to metallic material at

Art Unit: 1722

temperature lower than a melting point thereof during a solidification process. However, it is noted that when a metallic material at temperature lower than its melting point it becomes complete solid. It is impossible to form cavities in a solid metallic material. Also, the invention as claimed does not exclude the feature of Radjai et al that applies two fields.

(2) in page 3, last paragraph of the remarks, applicants stated that Radjai et al applies the vibrating force before and after the start of the solidification process. However, it is noted that the invention as claimed does not exclude that feature.

(3) with respect to the arguments as appearing on page 4, of the remarks, it is noted that since Radjai et al also show to apply the vibrating force before and after the solidification process, it is expected that their result will be the same as that of instant process.

(4) in page 5, first complete paragraph of the remarks, applicants stated that Radjai et al fail to teach or suggest refining a microstructure of other substances suspended in the Al-Si alloy or in a molten alloy metal. However, since Radjai et al also apply the vibrating force after the start of solidification process, their vibrating process also will refine the particles which form after the start of the solidification process.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kuang Lin whose telephone number is (703) 308-2322. The examiner can normally be reached on week day from 9:30 am to 6:00 pm.

Art Unit: 1722

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0651.

Group Facsimile No.: (703) 305-7718 (for any document other than the amendment after final office action), or
(703) 305-3599 (for the amendment after final office action only).

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8-24-01



KUANG Y. LIN
EXAMINER
GROUP 320

1722